

CLAIMS

1. A system for adjustment of power consumption within a power grid comprising:

a group controller;

a plurality of sensors distributed within the power grid, the sensors being configured to assess conditions including power consumption and delivered voltage level and being configured to transmit data representative of the assessed conditions to the group controller; and

a plurality of devices each configured to provide power control and each including a respective local controller associated with a respective one of the plurality of devices and configured to collect and filter data from one or more sensors of the plurality of sensors that are associated with the respective one of the devices, each of the plurality of devices being configured to adjust an associated output electrical parameter in response to commands from either the group or local controller, individual ones of the plurality of devices being distributed to respective locations within the power grid, each of the plurality devices being configured to increase or decrease the associated output electrical parameter when either the group controller or the associated local controller determines that such will reduce system power consumption.

2. A power adjustment apparatus comprising:

a local controller;

one or more sensors distributed within a power grid, the sensors being configured to assess conditions including power consumption and delivered voltage level and being configured to transmit data representative of the assessed conditions to the local controller;

a data processor configured to filter signals from the one or more sensors and to provide filtered signals to the local controller; and

a device associated with the data processor and configured to adjust an output power level in response to commands from the local controller, the device being configured to be deployed at an associated location within the power grid, the device being configured to increase an associated output electrical parameter when the local controller determines that such will reduce power consumption.

3. A process for adjusting power consumption within a power grid including a controller, a data processor and a plurality of sensors distributed within the power grid, the sensors being configured to assess conditions including power consumption and

delivered voltage level and being configured to transmit data representative of the assessed conditions to the controller, the data processor being configured to operate on data from the sensors and to derive control signals at least in part from analysis of the data, the power grid further including a plurality of devices each configured to adjust output voltage in response to the control signals, individual ones of the plurality of devices being distributed to an associated location within the power grid, the process comprising:

filtering the data from the sensors to provide conditioned data;

determining, by the controller and based in part on the conditioned data, when an increase or decrease in an output parameter from one device of the plurality of devices will reduce system power consumption; and

increasing or decreasing the associated output electrical parameter in response to the controller determining that such will reduce system power consumption.

4. A process for power distribution regulation comprising:

filtering data from electrical sensors to provide conditioned data representative of a portion of a power distribution grid;

determining, by a controller and based in part on the conditioned data, when an increase or decrease in an output

parameter from one regulator of a plurality of regulators in the power distribution grid will reduce system power consumption; and increasing or decreasing the associated output electrical parameter in response to the controller determining that such will reduce system power consumption.